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ABSTRACT

A one-week period of talk-show broadcasts from a Salt Lake City radio station was recorded and transcribed, in order to characterize the patterns of interaction which emerged from the talk between the six radio hosts and their callers. The coding system used focused on content and relationship aspects of communication. Results indicated that when someone introduces new information, the most probable transition is to content extensions and from there to further extension or to positive reinforcement. Interaction varied among hosts, though a more controlled, experimental study is needed to control such variables as time of day and demographic characteristics of listeners. In general, hosts and callers supported one another; statements which disagreed or negatively reinforced previous statements constituted less than 1% of the interaction.

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PATTERNS OF COMMUNICATION ON TALK RADIO

Presented at the Annual Convention of the
Broadcast Education Association, Washington, March 26, 1977

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PATTERNS OF COMMUNICATION ON TALK RADIO

During recent years there has been a demonstrated need for public access to the broadcast media, and two-way or "talk radio" has grown as a successful program format. Increasing numbers of radio stations are devoting at least a portion of their broadcast week to listener call-in programs, and the popularity of talk radio shows clear evidence of continued growth. An early study commissioned by CBS (1966) urged advertisers to spend more money on advertising for a talk station's audience than for a music station's audience. More recently, Groberg (1968), Crittenden (1970), and Turow (1974) began investigations into the unique nature and functions of talk radio. All of these researchers conclude that the talk radio format serves as an important form of human contact.

The interpersonal character of talk radio is especially significant. Talk radio is one of the few public media which allows for spontaneous interaction between two or more people. Any time two people interact they must perceive and respond to one another in some consistent and appropriate manner. One person's communication becomes data for another person's verbal response. This process of exchanging messages creates a pattern of talk which defines a symbol system for the interactants. That is, social reality is defined and becomes significant for the communicators. Interaction within the context of talk radio, then, is an important event for those people who participate. By knowing more about interaction patterns which result from a talk radio format, we gain insights into the communicative nature of two-way radio.

The purpose of this study was to characterize the patterns of interaction

which emerge from the talk produced by radio hosts and their callers. The emphasis is on the sequential structure of the talk--not trait measures of callers or hosts. The interaction is considered a system of verbal behavior and conclusions are drawn from the structure of this system. More specifically, the study posed the following general research questions.

1. What patterns of interaction emerge when people communicate via talk radio?
2. Do the patterns of interaction differ from one host to another?
3. If so, what is the nature of these differences?
4. Are the interaction patterns a function of host personality?
5. Does the communication vary as a function of time of day?
6. What are the functions of talk radio?

PROCEDURES

The study was conducted during a one-week period (Sunday-Saturday) at radio station KSXX in Salt Lake City, Utah. Each broadcast day was recorded on audio tape and subsequently transcribed. The authors and their research assistants divided the broadcast day into three equal time periods and monitored calls coming into the station. Each caller was later asked to provide a demographic profile.¹ The recorded interaction between hosts and callers constituted the data for this study.

The station's on-air staff afforded six distinctive personality types during the week-day period. Transcripts of approximately thirty hours of host-caller interaction during the Monday-Friday block provided the data base. The on-air personalities were classified as follows:

Host #1 - Wake-up Comic (8:00 a.m. - 10:00 a.m.): A quick-witted personality who can make light of most situations. He attempts to turn conversation to the humorous side and avoids spending too much time on heavy issues that are very serious.

Host #2 - Right Wing Conservative (10:00 a.m. - 12:30): An extremely conservative communicaster who is considered a major spokesman for the fairly extensive right wing element in Salt Lake City. He is considered to be the station's most effective on-air salesman and requested by advertisers more frequently than any other host.

Host #3 - Light Conversational (12:30 p.m. - 2:00 p.m.): An avid supporter of theatre and the arts. Host #3 excels in the discussion of topics which are of specific interest to the woman of the house. He frequently generates call-in responses by reciting selections of poetry or providing a favorite recipe.

Host #4 - Left Wing Liberal (2:00 p.m. - 3:30 p.m.): A young intellectual who represents a very liberal point of view, he is seen as providing the necessary balance for Host #2. He frequently utilizes guests in order to get more deeply into issues.

Host #5 - Moderate Businessman (3:30 p.m. - 6:00 p.m.): A full-time stock broker who is well known in the community and represents a middle-of-the-road point of view. Generally considered as being open-minded by station management, but whose on-air presence has been characterized by callers as "curt."

Host #6 - Passive Listener (6:00 p.m. - 8:00 p.m.): Basically

conservative, he is willing to let callers express themselves at great lengths with only infrequent interruptions. His viewpoints and positions on issues tend to reflect the religious overtones which are predominant in the Salt Lake Community.

Coding

The interaction between program host and call-in listener was subjected to interaction analysis using a derivation of Hawes' (1972a; 1972b) category system. The Hawes system classifies messages into one of thirteen categories. Though the coding scheme was modified for the purposes of this study, the system retained its focus on content and relationship aspects of communication.

Generalizing (G) pertains to statements which present non-verifiable information. Disruption (D) occurs when someone attacks another. Messages which disagree or seek to discourage continued interaction are negatively reinforcing (NR). Statements which sought new verifiable information were content questions (CQ). Content clarification (CC) occurred when someone provided information which interpreted or clarified previous information. (C) was content and defined as verifiable information. Comments which extend or elaborate on previously discussed information were considered content extension (CE). Encouraging continued interaction or agreeing was termed positive reinforcement (PR). Sentence fragments with no meaning were labeled incomplete (I). Relationship extension (RE) meant that statements were supportive or provided information about affective condition. A relationship question (RQ) asked for information about feelings. Relationship clarification (RC) were messages which requested information to clarify an affective state. Finally, structuring (St)

statements provided suggestions for behavior.²

Each communicative act served as a unit of data and was coded into one of the thirteen categories. A communicative act is an individual's single uninterrupted utterance. One act terminates and another begins when another person in the conversation begins to speak.

Data Display and Analysis

The data (coded interaction) were then projected onto an interact matrix to reveal patterns of connected statements. The rows of an interact matrix represent antecedent statements and the columns represent subsequent statements. (See Fisher, 1970; Ellis & Fisher, 1975; Bales, 1950; Stech, 1970). Therefore, these data were mapped onto a 13×13 matrix containing 169 possible interact units. An interact matrix was generated for each host. Another matrix which contains the entire population of data (all six hosts) is called the composite matrix.

These interact frequencies were then transformed into transition probabilities. A transition probability is the probability of entering a specific state (category) given the last state occupied. For a population categorized into the thirteen states above the communication may be profiled by the following transition matrix.

$$P_{11n} \quad P_{12n} \quad P_{12n} \dots \dots \dots \dots \dots \dots \quad P_{113n}$$
$$P_{21n}$$
$$P_{31n}$$
$$P_1 (1)_n = \begin{matrix} \cdot \\ \cdot \\ \cdot \\ \cdot \\ \cdot \end{matrix}$$
$$P_{131n}$$

That is, given the probability of being in state one (generalizing), the probability of making the transition to any other state is given by row one of the transition matrix.

Moreover, the transition probabilities in one matrix can be compared to the probabilities in another matrix using a statistical procedure devised by Anderson and Goodman (1957). In this study the interaction produced by each host and his callers was (a) compared to the composite (all data) interaction; and (b) compared to every other host. The Anderson and Goodman statistic has a chi square distribution. For any comparison there is first an overall Anderson and Goodman statistic. A significant overall statistic indicates that the transition probabilities within individual matrices differ from the composite matrix. The Anderson and Goodman for a particular state, then, means that the transition probabilities from that state (category of talk) differ from the composite. We have a single statement about the significance of a composite matrix, and a test for specific sources of variance generated by individual functions (states).

Finally, the importance of a particular interact is obtained by observing structure inducing cells in a matrix. An interact induces structure when its frequency and transition probability exceed random expectations. Given thirteen cells in a row which sum to 1.0, the randomly expected transition probability for any interact is .07. Expected frequency is the result of dividing the total N of a matrix by 169. Structure inducing cells indicate that a particular type of interaction is occurring frequently.

RESULTS

Interrater reliability (Guetzkow, 1950) was computed and considered satisfactory ($R = .82$; $p < .05$). This statistic indicates that coders understood the coding scheme and applied it consistently.

The frequencies for each host are reported in Table I. Host #1 and his callers, for example, produced 64 units of communicative acts which were coded into category one. There were 40 units of category two, and so on. The first host had a total of 2,405 units with an expected frequency of 14 per call. The composite row reports totals. This study generated 10,750 units of data, i.e., verbal utterances.

INSERT TABLE 1

Table 2 reports the results of the Anderson and Goodman statistics for each host compared to all other hosts. The overall Anderson and Goodman statistic was significant ($A-G = 1268.16$; $df = 780$; $p < .01$) and indicates varying patterns of interaction between matrices (host-caller interaction). The significant Anderson and Goodman statistics for a state indicate that the transition probabilities from that state for that host differ from the composite matrix.

INSERT TABLE 2

As noted above, the early morning host (8:00 a.m. to 10:00 a.m.) is a quick-witted wake-up comic and rarely engages in controversial issues.³ Consistent with all other hosts, he spends considerable time extending content (CE). However, the existence of a significant content (C) category is the distinguishing characteristic of the interaction produced by the early morning host and his callers. While all host-caller interaction is characterized by prolonged content extension, only the first host exhibits a significant amount of new information (C).

People who call Host #1 introduce a subject (C), comment on the subject (CE), and then begin the process again. Furthermore, since callers gain pleasure from their exchanges with the first host there is considerable positive reinforcement (PR). Below we will see that the second host also provides and receives significant positive reinforcement, but for a very different reason.

The transitions from either C, CE, or PR are often to relationship extension. The conversation promoted by this host leads to relational support. A previous study (Avery, Ellis, & Glover, 1976) reported that a large proportion of the callers for Host #1 were female homemakers who listened daily. These callers are not threatened by this host and assume that their relationship with the host is one of quality. Reinforcing this quality relationship is very important to the talk radio listener.

Host #1 and his callers engage in significant structuring (St) behavior. Structuring involves subtle recommendations for behaving or abrupt redirection of the interaction. Numerous topic changes account for the structuring interaction. The host's superficial treatment of diverse topics lends itself to rapid topic fluctuation. The host or a caller will initiate a new topic with almost no warning.

Later in the morning (10:00 a.m. to 12:30 p.m.) the second host (right wing conservative) begins his program. Except for two distinguishing characteristics, the interaction patterns produced by Host #2 and his callers resembles that of the first. To begin, the late morning host does not generate a significant content (C) function (see Table 2). Where the first host and his callers introduce and elaborate upon a wide variety of information, the second host spends

considerable time on a single issue. Except for category six (cont'd), hosts 1 and 2 have all significant categories in common. Since the late morning host encourages intense discussion of controversial issues, he and his callers are more likely to digress and meander around a topic than introduce substantive information. Moreover, the significant structuring category is consistent with the extreme views of the host. He is constantly offering advice on how people should behave. Host #2 tells people how to vote, what to believe, and who to trust all of which are compatible with his rigid political perspective.

One other interaction sequence distinguishes Host #2 from the others. The transition from positive reinforcement (PR) to generalizing (G) induces structure in the interact matrix generated by Host #2 and his callers. Generalizing involves analyzing or arguing an idea in broad and abstract terms. The interactants reinforce each other and then proceed to generalize. As they mirror one another verbal behavior, each individual demands less justification from the other and projects more of himself into the others statements. This process of mutual reinforcement engenders confidence in the communicators and facilitates the expression of abstractions. Generalizing functions to reinforce the doctrinaire attitudes of the host and his callers.

The 12:30 p.m. to 2:00 p.m. communicaster, Host #3, takes more calls than any other host. He is a noncontroversial supporter of the arts and often reads poetry and exchanges recipes. This host's interaction also centers around continuous elaboration and extension of subject matter (CE), with significant positive reinforcement (PR) and structuring (St).

Host #3 is distinguished by significant relationship extension (RE).

Relationship extension is an interesting verbal function involving empathetic or supportive statements. These statements are not ideational in nature but refer to affect or feeling states. Similar to the first host, the third host provides nonthreatening interaction. Callers discuss topics of artistic interest and reinforce one another for their insights. People calling Host #2 are also reinforcing but emphasize ideational rather than relational support. This ideational-relational distinction is the crucial difference which separates hosts 1 and 3 from the second host.

From 2:00 p.m. to 3:30 p.m. (Host #4) there is a dramatic drop in the simple frequency of interaction. This host is liberal and frequently counters the positions taken by Host #2. No significant positive reinforcement and structuring separates this host from the others. He spends most of his time exploring the details of a subject. He takes fewer calls and utilizes special guests who have expertise in some political matter. Beyond the typical extension of content with occasional transition to statements of new information or positive reinforcement, the host and his callers do not vary their interaction modes. The significant relationship extension (RE) category probably reflects the hosts moral overtones. Everyday political events are translated into personal implications. Host #4 attempts to provide a supportive atmosphere and is not as adamant as the conservative host. Though he maintains definite opinions, Host #4 rarely "instructs" his listeners about what to believe or how to behave.

The late afternoon host (3:30 p.m. to 6:00 p.m.) represents a moderate point of view and often discusses business affairs. Host #5 displays significant content extension (CE) and structuring (St). Most of the interaction is ideational

rather than relational, as evidenced by the lack of significant positive reinforcement and relationship extension. The simple content of the talk accounts for the interaction in this time slot. The host rarely addresses ego-involving political issues or topics of personal interest to his listeners. Host #5 functions as a credible information source who dispenses advice on economic or business matters. Interpersonal rewards or relationship development are inconsequential to Host #5.

The final host (6:00 p.m. to 8:00 p.m.) also produces highly stable interaction. There are significant transitions from only one category of interaction. The closing communicaster is a passive listener who represents the predominant religion in the community. He takes very few calls at this hour of the day and spends most of his time extending on single issues. This host does not dominate nor does he communicate at the relationship level.

DISCUSSION

Turow (1974) argued that the call-in listener to a talk radio format is motivated by the need for interpersonal contact. People consider talk radio an information source and an outlet for their need to express themselves. The host at the other end of a telephone satisfies a variety of interpersonal functions for the caller. He serves not only as a source of information, but as a responsive human who can confirm or disconfirm a caller's self-concept. Many callers report anger or rejection when they are mistreated by a host. Although several demographic studies of talk radio suggest the importance of interpersonal communication (Avery, Ellis, Glover, 1976; Turow, 1974; Groberg, 1968), none of these studies directly investigated the patterns and functions of communication.

on talk radio.

The results of the present study support the following conclusions.

(1) There is a cyclical pattern of interaction among the C, CE, and PR states. A cyclic pattern is a set of states which have each other as their most probable transition. The pattern below is a discussion pattern where information is introduced and processed by the interactants. Figure 1 graphs the transitions with the cyclical pattern.

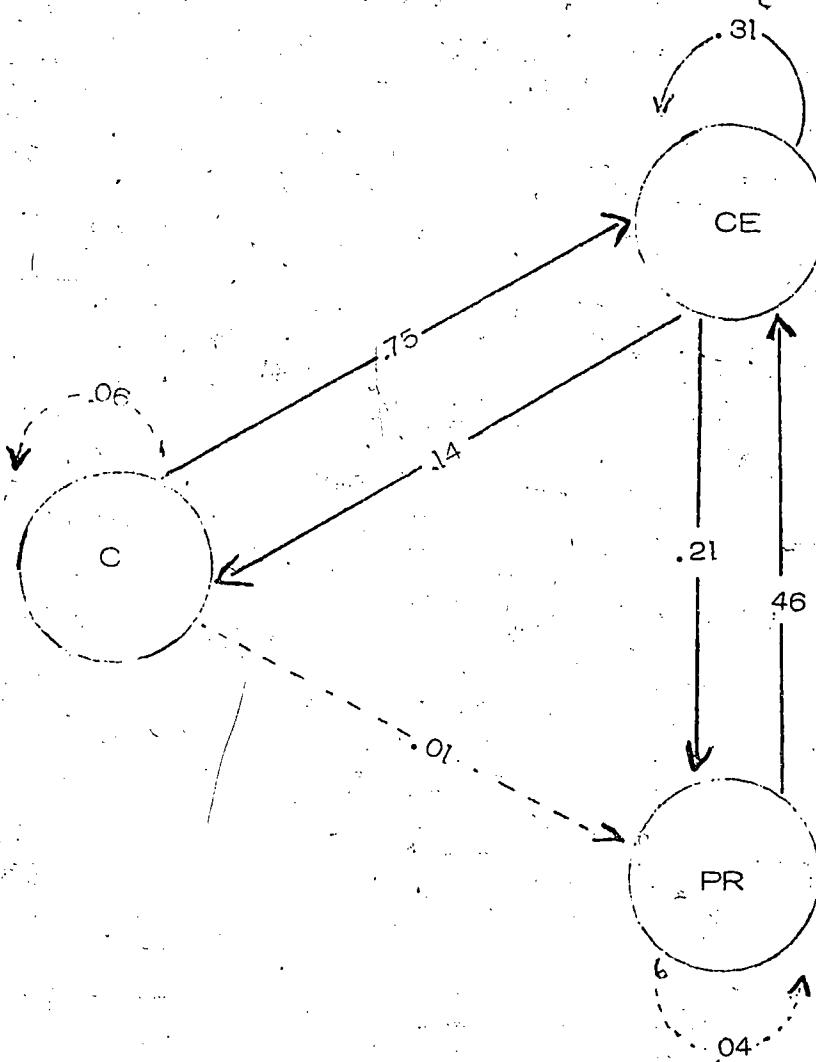


Figure 1
Cyclical pattern of information processing

The content (C) category functions as an initiator state and sets the process into motion. After someone introduces new information, the most probable transition is to information extension (CE, .75). And the most probable transition from CE is to further extension (.31). The communicators spend considerable time in this process. There are long chains of ideational extension and the which are most useful for processing discussion topics. If content is not extended it tends to be reinforced. This is a surprising finding. Turow (1974) concluded that people called to express opposition rather than support. In this study statements which disagree or negatively reinforce constitute less than 1% of the interaction. Negative reinforcement is the most infrequent verbal function. This interaction reflects a concern with finding support and justifying beliefs rather than expressing opposition. Finally, if information is not extended or reinforced, the cycle returns to the initiation of new information. This information cycle is highly prevalent in these data and constitute 47% of the interaction.

(2) The interaction varies as a function of time of day. The first three hosts (8:00 a.m. to 2:00 p.m.) account for 63% of the phone calls and 68% of all verbal units. Moreover, 11 of the 16 significant categories (68%) are generated within this time period. There is more new information, positive reinforcement, and structuring during the morning. The late afternoon and evening are almost completely characterized by content extension. These findings are possibly explained by daily activity patterns. However, a more plausible explanation involves the interaction between caller and host personality.

(3) Most callers claim they are attracted to particular personalities.

These data indicate that the interaction varies across hosts. Hosts #1, #3, and #4, who listeners perceive as more agreeable and less dogmatic, produce communication which is more conducive to relationship development. These people seek and express opinions about feelings. They are often empathetic and supportive of divergent opinions. Many listeners report calling these hosts because they will not be cut off or treated with disrespect. Hosts #2, #5, and #6 communicate more mechanically. They are more concerned with either structuring behavior, dispensing information, or listening quietly. Those hosts rarely depart from ideological matters and engender a communicative style consistent with efficient information exchange.

Though each host and his callers is characterized by specific modes of interaction, it would be premature to emphatically conclude that the talk is a function of host personality. The present study is no exception and provides stronger evidence for this conclusion. However, there is an urgent need for a more controlled study in an experimental setting. In this way, possible contaminating variables such as time of day or demographic characteristics can be controlled.

Talk radio is more than a mere outlet for opinions. It is a medium for interpersonal communication. The results of our earlier demographic study indicated that 72% of those people interviewed listened to talk radio every day. Moreover, many listeners are retired and living on moderate to low incomes. Very simply, these people use two-way radio as a window on the world. Many callers report that they listen to two-way radio to acquire information about important political and social events. Others claim that talk radio affords them

the opportunity to make their opinions public.

Talk radio must continue to receive serious scholarly attention. Any medium which occupies so much of someone's interaction time cannot be treated lightly. This study indicates that hosts and callers support one another. Possibly this interpersonal support is central to the lives of people who listen daily. These people need human contact. The results of this study and others support this contention.

There are numerous research problems which need answering. Demographic characteristics must be confirmed. Interviewing procedures should prove useful for constructing personality profiles of talk-radio listeners. Given adequate information about listeners, radio stations can become important centers of information diffusion. The specific effects of host personality requires careful scrutiny. What kind of person calls what kind of host, and why? As an area of research the examination of specific interaction patterns is rich with implication. Given the host and listener profiles, if communication patterns can be predicted, the prospect for predicting specific outcomes is not remote.

NOTES

¹The results of this demographic study are reported in detail in Avery, Ellis, & Glover (1976).

²A complete coding manual including operationalizations and coding rules is available from the authors.

³More complete personality descriptions are reported in the Avery, Ellis, Glover (1976) study.

REFERENCES

- Anderson, T.S., & Goodman, L.A. Statistical inferences about Markov chains. Annals of Mathematical Statistics, 1957, 28, 89-110.
- Avery, R.K., Ellis, D.G., & Glover, T.W. A Demographic Profile of Talk Radio's Call-in Listener: Paper presented to Broadcast Education Association Convention. Chicago, Ill. 1976.
- Bales, R.F. Interaction process analysis: A method for the study of small groups. Cambridge, Mass.: Addison-Wesley, 1950.
- CBS. Broadcasting, June 27, 1966, 75-81.
- Crittenden, J. Democratic functions of the open mike radio forum. Public Opinion Quarterly, 1970, 35, 200-210.
- Ellis, D.G., & Fisher, B.A. Phases of conflict in small group development: A Markov analysis. Human Communication Research, 1975, 1, 195-212.
- Fisher, B.A. Decision emergence: Phases in group decision making. Speech Monographs, 1970, 37, 53-66.
- Groberg, M.J. An effectiveness study of a telephone conversation radio program. Unpublished masters thesis, University of Utah, 1968.
- Guetzkow, H. Utilizing and categorizing problems in coding qualitative data. Journal of Clinical Psychology, 1950, 6, 47-50.
- Hawes, L.C. Development and application of an interview coding system, Central States Speech Journal, 1972a, 23, 92-99.
- Hawes, L.C. The effects of interviewer style on patterns of dyadic communication. Speech Monographs, 1972b 39, 114-123.
- Stech, E.L. An analysis of interaction structure in the discussion of a ranking task. Speech Monographs, 1970, 37, 248-263.
- Turow, J. Talk show radio as interpersonal communication. Journal of Broadcasting, 1974, 18, 171-179.

STATE FREQUENCIES FOR
ALL TALK HOSTS

TABLE I

| G | D | NR | CQ | CC | C | CE | PR | I | RE | RG | RC | St | TOTAL |
|---|---|----|----|----|---|----|----|---|----|----|----|----|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |

| | | | | | | | | | | | | | | |
|--------------|-----|-----|----|-----|-----|-----|-------|-------|-----|-------|-----|-----|-------|--------|
| m. | 64 | 40 | 13 | 34 | 20 | 13 | 364 | | 142 | 387 | 17 | 86 | 586 | 2,405 |
| 30p.m. | 137 | 29 | 26 | 47 | 32 | 183 | 540 | 284 | 115 | 176 | 25 | 44 | 518 | 2,156 |
| 2p.m. | 52 | 20 | 11 | 90 | 68 | 184 | 887 | 394 | 72 | 277 | 21 | 15 | 663 | 2,754 |
| 0p.m. | 24 | 3 | 2 | 25 | 18 | 71 | 174 | 79 | 24 | 52 | 17 | 3 | 160 | 652 |
| 6p.m. | 45 | 15 | 15 | 28 | 18 | 138 | 374 | 122 | 69 | 181 | 15 | 49 | 399 | 1,468 |
| m. | 28 | 16 | 10 | 29 | 22 | 112 | 437 | 121 | 77 | 107 | 5 | 6 | 345 | 1,315 |
| OSITE ALS | 350 | 123 | 77 | 253 | 179 | 856 | 2,996 | 1,265 | 499 | 1,180 | 100 | 203 | 2,669 | 10,750 |

ANDERSON-GODMAN STATISTICS FOR ALL
STATES / ALL TALK HOSTS

TABLE 2
CATEGORY

| G | D | NR | CQ | CC | C | CE | PR | I | RE | RG | RC | St |
|------|------|------|------|------|-------|-------|-------|------|-------|------|------|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 9.6 | 10.6 | 8.9 | 14.3 | 16.0 | 23.5* | 28.5* | 54.2* | 11.2 | 19.1 | 12.2 | 10.9 | 28.5* |
| 10.5 | 14.1 | 4.4 | 10.0 | 8.46 | 10.6 | 40.9* | 31.2* | 10.8 | 17.0 | 10.9 | 10.0 | 29.9* |
| 11.7 | 11.8 | 10.9 | 6.3 | 11.3 | 13.2 | 40.8* | 41.6* | 13.3 | 54.4* | 10.2 | 12.5 | 32.6* |
| 9.6 | 8.0 | 6.5 | 6.5 | 12.0 | 18.4 | 34.3* | 9.7 | 17.6 | 22.5* | 5.5 | 2.3 | 12.8 |
| 12.6 | 12.2 | 10.1 | 18.8 | 6.8 | 16.7 | 24.0* | 19.8 | 15.6 | 17.5 | 7.9 | 18.7 | 27.8* |
| 15.8 | 6.0 | 12.4 | 7.4 | 10.6 | 9.7 | 29.7* | 15.2 | 17.5 | 11.3 | 3.5 | 4.2 | 20.1 |

p. < .05; df=12